

# MUTUALLY EXCLUSIVE EVENTS.

Compound Events

def: Two <sup>or more</sup> events such that no two events can happen at the same time.

FIND THE PROBABILITY OF THIS TYPE OF COMPOUND EVENT BY ADDING. THESE EVENTS ARE USUALLY CONNECTED BY "OR" INSTEAD OF "AND". IN THIS CASE, SOLVE USING:  $P(A \text{ or } B) = P(A) + P(B)$

ex: A die is rolled. What is the  $P(3 \text{ or } 5)$

$$P(3 \text{ or } 5) = P(3) + P(5) \\ \frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3} \text{ or } 33.3$$

IF THE EVENTS COULD EITHER HAPPEN SEPARATELY OR AT THE SAME TIME THEY ARE NOT MUTUALLY EXCLUSIVE. IN THIS CASE, SOLVE USING:

MUTUALLY Inclusive -  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

ex: A die is rolled. What is the probability of rolling a 2 or a prime number?

Since 2 is a prime #, these events are not mutually exclusive

$$P(2 \text{ or prime}) = P(2) + P(\text{prime}) - P(2 \text{ and prime}) \\ \frac{1}{6} + \frac{3}{6} - \frac{1}{6} \\ \frac{3}{6} = \frac{1}{2} \text{ or } 50\% \text{ chance}$$